Prosody-morphology interactions in Mantauran Rukai

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1 Introduction

This paper presents asymmetries in how certain types of morphology interact with prosody and intonation in Mantauran Rukai. Rukai is a Formosan language, i.e. one of the sixteen indigenous Austronesian languages of Taiwan. Mantauran is the variety of Rukai spoken in the village of 'oponoho (Chinese: Wanshan 萬山), in Maolin District, Kaohsiung County. There is considerable variation among Rukai 'dialects', with Mantauran in particular standing out as the only Formosan language with stress aligned to the left edge of the word. While Mantauran Rukai has seen a number of descriptions of its morphological and syntactic structures (Zeitoun, 2007, inter alia), including an in-depth analysis of the distribution and usage of morphemes in the language, the current study finds yet-undescribed complex interactions between morphological and prosodic structures, as well as typologically-rare patterns such as an alternation between 1st- and 3rd-syllable stress. This paper will provide an updated stress assignment system based on evidence from intonation, an outline of how the system interacts with morphology, and a diachronic account of an asymmetry in the prosody-morphology interface.

2 Existing literature

While all other varieties of Rukai have either pen-/antepenultimate stress (Li, 1977), Mantauran has been described in the literature as having initial stress on all forms. Zeitoun (2007, 26) notes additionally that prefixes can bear stress, and that a secondary stress is available on the third syllable of words of a certain (unspecified) length, giving the example *vélevèle* 'banana', where the acute accent ´ marks primary stress, and the grave accent ` marks secondary stress.[1]

Another relevant structure is 'echo vowels', found in all Rukai varieties, as well as the nearby languages Saaroa, Kanakanavu, and Tsou (Li, 1977, 25). 'Echo vowels' are epenthesized at the end of (otherwise) consonant-final words. This vowel matches the preceding vowel in quality, unless the preceding vowel is /a/, in which case the echo vowel surfaces as [ə] in Rukai.

3 Revisiting stress assignment

While the existing literature describes Mantauran as having initial stress, the current study finds a more complex system, which is sensitive to word length.

3.1 Stress on 2- and 3-syllable words

In words of 2–3 syllables, stress is realized on the first syllable of the word. Examples include disyllabic *kóne* 'DYN.SUBJ/eat', and trisyllabic *tá'olro* 'dog'.[2] Stress is realized as an F0 maximum, with 2/3-syllable words beginning with a high tone (H) and ending with a low (L).

[1] All symbols are IPA except: <c> /ts/; <dh> /ð/; <e> /ə/; <lr> /ɭ/; <ng> /ŋ/; <'> /ʔ/.

[2] Aside from Leipzig glosses, others are taken from Zeitoun (2007), including 'DYN' (dynamic verb); 'STAT' (stative verb); '(N)FIN' (non-/finite); 'HUM' (human).

3.2 Stress on 5+-syllable words

Words of 5+ syllables surface with two distinct intonational contours, both when produced in isolation, and when they form a prosodic phrase within a larger utterance. Both contours are available on all lexical items, and occur in free variation (at least for words in isolation). One contour, the 'peak' contour, starts with an initial rise, has a peak on the third syllable, and then falls in F0 to the end of the phrase: [L _ H ... L] (where '_' is a syllable unspecified for tone). An example can be seen in Figure 1, showing a pitch track of *a-valrovalro* 'pl-young.woman'.

The other contour is the 'plateau' contour, in which there is a high plateau for the first three syllables, followed by a fall spanning the rest of the word: [H H H ... L]. An example can be seen in Figure 2, showing a pitch track of *kangahatengate* 'palate' with 'plateau' intonation.

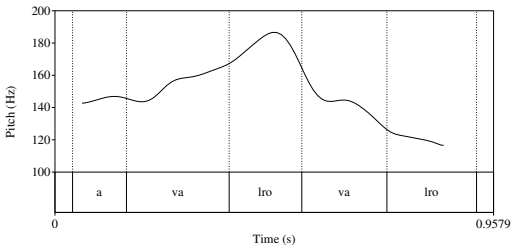

Figure 1: Pitch track of *a-valrovalro* 'pl-young.woman' with 'peak' intonation.

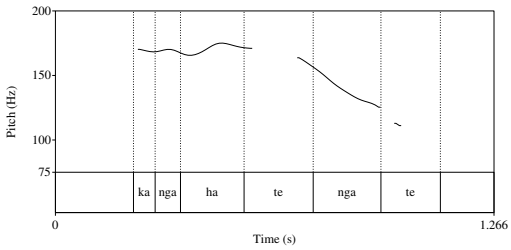

Figure 2: Pitch track of *kangahatengate* 'palate' with 'plateau' intonation.

What both 'peak' and 'plateau' contours have in common is a F0 maximum (H tone) on the third syllable of the word. I argue that this H is indicative of prominence on the third syllable of the word (*a-valróvalro*; *kangahátengate*), as it is in 2-/3-syllable words. The difference between the two contours is thus the initial L vs. H tone, which can be analyzed as boundary tones rather than pitch accents marking the prominent syllable. This same variability in initial %L vs. %H boundary tones preceding the prominent syllable was also noted in this study in the nearby languages Saaroa and Tsou. There is no acoustic evidence of secondary stress.

3.3 4-syllable words, and the stress alternation

Some 4-syllable words pattern with the stress-initial 2-/3-syllable words, while others pattern with the 5+-syllable words with 'peak' and 'plateau' intonation. The 4-syllable words that surfaced with initial stress in the current study were generally those that had echo vowels, the word-final epenthetic vowels of predictable quality. For example, *típitipi* 'slap' can be analyzed as underlyingly /tipitip/, with the surfacing final [i] epenthetic. Without this [i], the underlying form has one fewer syllable nucleus, and stress is thus assigned to the initial syllable, as it is for underlyingly trisyllabic words like *tá'olro* 'dog'.

This alternation can be seen most easily through the addition of suffixes: both *típitipi* 'slap' and *tipitíp-a* 'slap-IMP' surface with four syllables, but only *tipitíp-a* has four nuclei in the underlying form. With this in mind, stress assignment in Mantauran can be summarized as follows: stress falls on the first syllable if the domain of stress is less than 4 syllables, but on the third syllable if the domain of stress is 4+ syllables.

One way to account for this alternation metrically is to make the final syllable extrametrical, and build trochees from the left edge. Word-prominence is assigned to the first foot, but shifts right one foot when possible. The extrametrical final syllable is unavailable as a landing site. Examples can be seen in (1–2), in which the shift to third syllable stress is available in *kangahátengate* 'palate' but not the shorter *tá'olro* 'dog'.

(1)

x						x	ω (Word)	
x				x			φ (Foot)	
x	x	<x>		x	x	<x>	σ (Syllable)	
ta	*'o*	*lro*	↛	*ta*	*'o*	*lro*	'dog'	

(2)

x										x					ω
x		x		x				x		x		x			φ
x	x	x	x	x	<x>			x	x	x	x	x	<x>		σ
ka	*nga*	*ha*	*te*	*nga*	*te*	→		*ka*	*nga*	*ha*	*te*	*nga*	*te*		'palate'

4 The interaction of prosody and morphology

Since stress assignment in Mantauran is different for domains of 2–3 vs. 4+ syllables, the two types of stress assignment serve as a diagnostic for what kind of morphology is included in the domain of stress assignment. As shown by the pair *típitipi* 'slap' vs. *tipitíp-a* 'slap-IMP', the imperative suffix *-a* is included in the domain of stress assignment, as it expands the domain past the 4-syllable boundary necessary for third syllable stress. The 'echo vowels' such as the final [i] in *típitipi* are not counted in this domain.

Many prefixes are also part of the domain of stress assignment, including the stative prefixes *ma-* 'STAT.FIN' and *ka-* 'STAT.NFIN', and the human plural prefix *a-*. However, two prefixes are not included in the domain of stress assignment: the dynamic finite verb marker *o(m)-*, and subjective nominalization prefix *ta-*. This can be seen in the examples below, where '[ ]$_{\text{Str}}$' marks the domain of stress: (3a–c) show domains of third-syllable stress including *ma-*, *a-*, and *ka-*, but excluding *ta-*, while in (3d), the exclusion of *o(m)-* causes the smaller domain to surface with first syllable stress. (3e) shows an example where *o(m)-* surfaces as the prevocalic [om] allomorph, which is still excluded from the domain of stress.

(3)

a.	[*ma-somíkace*]$_{\text{Str}}$	'STAT.FIN-healthy'	(*ma-* included)
b.	[*a-valróvalro*]$_{\text{Str}}$	'pl.HUM-healthy'	(*a-* included)
c.	ta-[*ka-eáea*]$_{\text{Str}}$	'SUBJNMZ-STAT.NFIN-one'	(*ta-* excluded; *ka-* included)
d.	*o-*[*lrího'o*]$_{\text{Str}}$	'DYN.FIN-know'	(*o(m)-* excluded)
e.	*om-*[*íki*]$_{\text{Str}}$	'DYN.FIN-exist'	(*o(m)-* excluded)

Of the morphemes that attach to the end of the word, only the imperative suffix *-a* was included in the domain of stress in the data elicited in this study. Two other types of morphemes were found attached word-finally, however. One are the weak pronouns, described by Zeitoun (2007) (and other authors) as enclitics. As most of the Formosan languages surveyed in the current study (except Paiwan) excluded clitics from the domain of stress assignment, this is unsurprising. However, the negator *ka*, described in these works as a suffix, is also excluded from the domain of stress, and on this basis, I analyze it too as an enclitic *=ka*. The exclusion of *=ka* and the pronominal clitics *=li* '1sg.GEN' and *=i* '3sg.GEN' can be seen in examples (4a–b), which can only be analyzed through the 1st/3rd-syllable stress paradigm if the domain of stress contains only the stem.

(4)

a.	*o-*[*lrího'o*]$_{\text{Str}}$*=ka=li*	'DYN.FIN-know=NEG=1sg.GEN'
b.	*om-*[*íki*]$_{\text{Str}}$*=ka=i*	'DYN.FIN-exist=NEG=3sg.GEN'

The morphology included and excluded from the domain of stress in Mantauran Rukai is summarized in Table 1.

	Domain of Stress Assignment				
o(m)- 'DYN.FIN' *ta-* 'SUBJNMZ'	*ma-* 'STAT.FIN' *ka-* 'STAT.NFIN' *a-* 'pl.HUM'	STEM	*-a* 'IMP'	($V_{epenthetic}$) *=ka* 'NEG'	Pron.

Table 1: Morphology included and excluded from the domain of primary stress assignment in Mantauran Rukai. 'Pron.' here stands for pronominal suffixes/enclitics.

5 Motivating the *o(m)-* vs. *ma-* asymmetry

Mantauran Rukai has a dynamic vs. stative verbal paradigm, with finite verbs marked with *o(m)-* if they are dynamic or *ma-* if they are static. However, while *ma-* is included in the domain of stress assignment, *o(m)-* is not. While unusual, this asymmetry has a likely historical origin. While both *o(m)-* and *ma-* in modern Mantauran are monosyllabic, *o(m)-* is only so in Mantauran. In other dialects like Budai, the cognate is *o-a-*; and Ross (2009, 312) reconstructs disyllabic **u-a-* to Proto-Rukai (vs. monosyllabic **m(a)-*, largely unchanged today).

When Proto-Rukai **u-a-* was reduced to modern Mantauran *o(m)-*, it is likely that the third-syllable stress that fell on the first syllable of the stem (*[*u-a-*óσσ]$_{Str}$) was reanalyzed as the first syllable of a stress domain excluding the prefixal material (*o(m)-*[óσσ]$_{Str}$). This reanalysis can be seen in (5a–b), showing the prosodic structures of *o-(a-)lriho'o* 'DYN.FIN-know' and *ma-somikace* 'STAT.FIN-healthy' in pre-Mantauran and modern Mantauran. In both stages, the prominence in *o-(a-)lriho'o* falls on the syllable *lri*.

(5)

						→											
		x						x					x				ω
x		x						x			x		x				φ
x	x	x	x	<x>		<x>	x	x	<x>		x	x	x	x	<x>		σ
**o-*	*a-*	*lri*	*ho*	*'o*		*o-*	*lri*	*ho*	*'o*		*ma-*	*so*	*mi*	*ka*	*ce*		
a. pre-Mantauran						b. modern Mantaruan					c. pre-/modern Mantauran						

This account of extrametrical *o(m)-* also places the shift from **u-a-* to modern *o(m)-* after the historical stage when Mantauran diverged from the right-edge stress elsewhere in Rukai.

6 Conclusion

Revisiting Mantauran Rukai with new evidence from intonation finds a number of typologically-uncommon patterns, including an alternation between 1st-/3rd-syllable stress, and a morphological paradigm in which some forms are part of the domain of stress but not others. The exclusion of some morphemes from the domain of stress may have a historical origin, where the foot structure of **u-a-* caused a reanalysis of the domain of stress assignment.

References

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